

Sheet 1 of 23
37658.00008.UTL1
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(858) 720-2500
EL997866395US

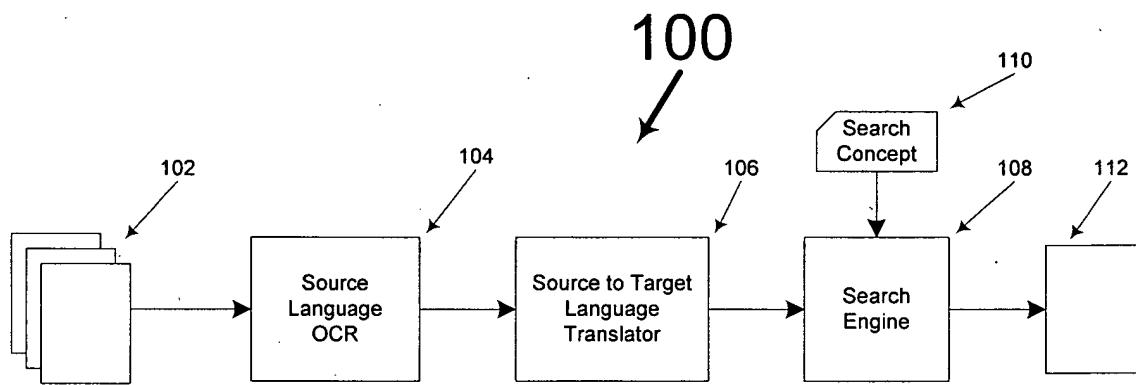


Figure 1

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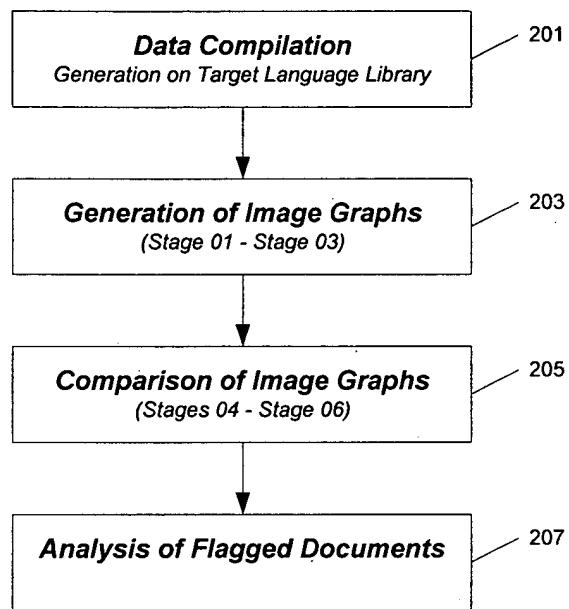


Figure 2

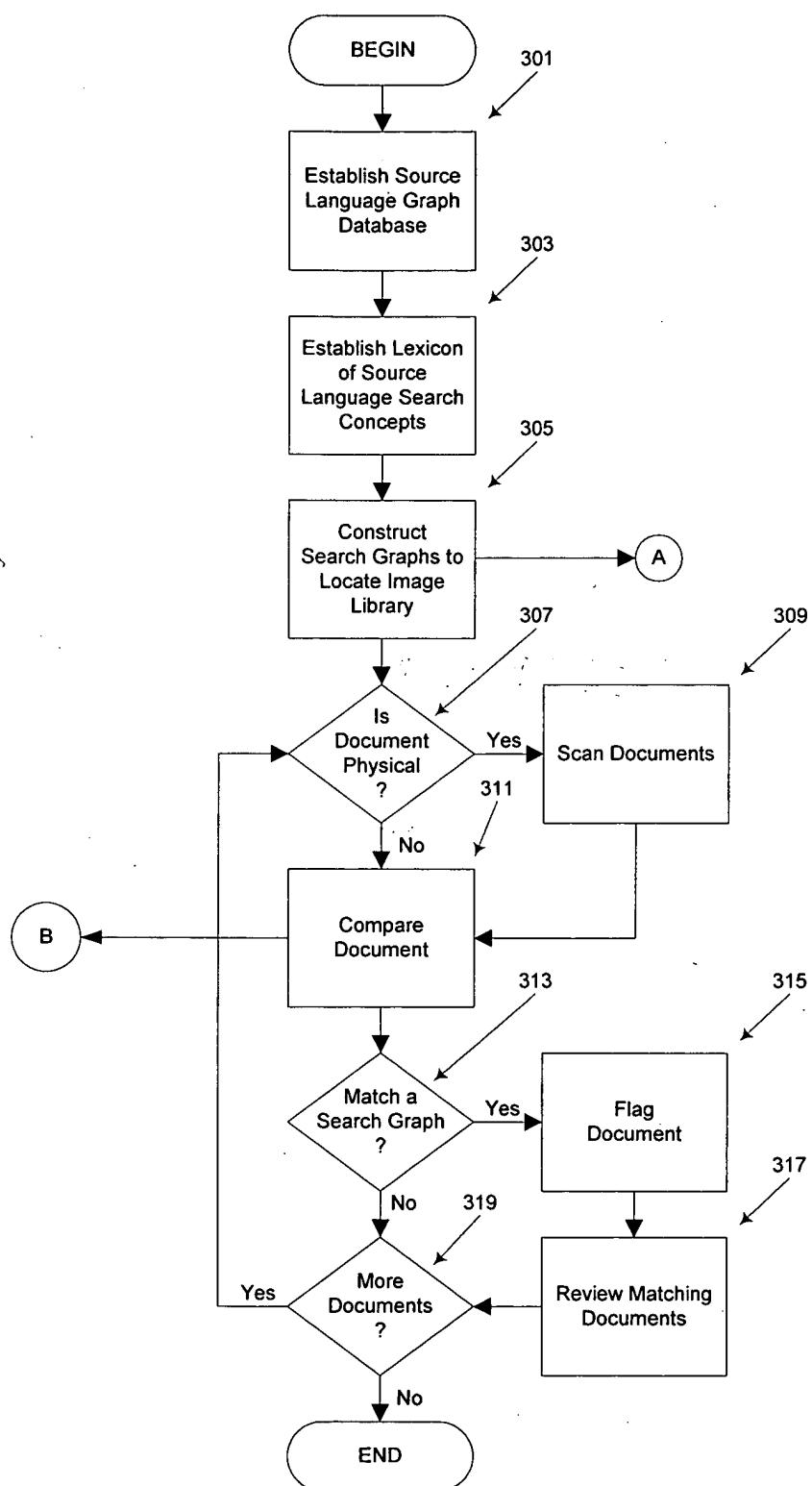


Figure 3

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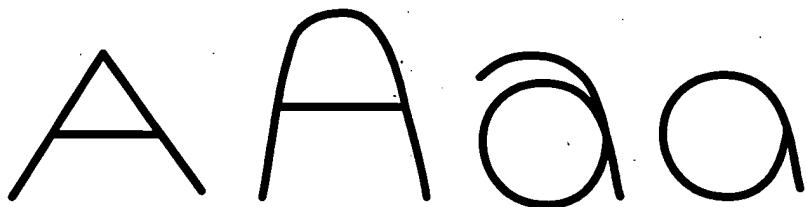
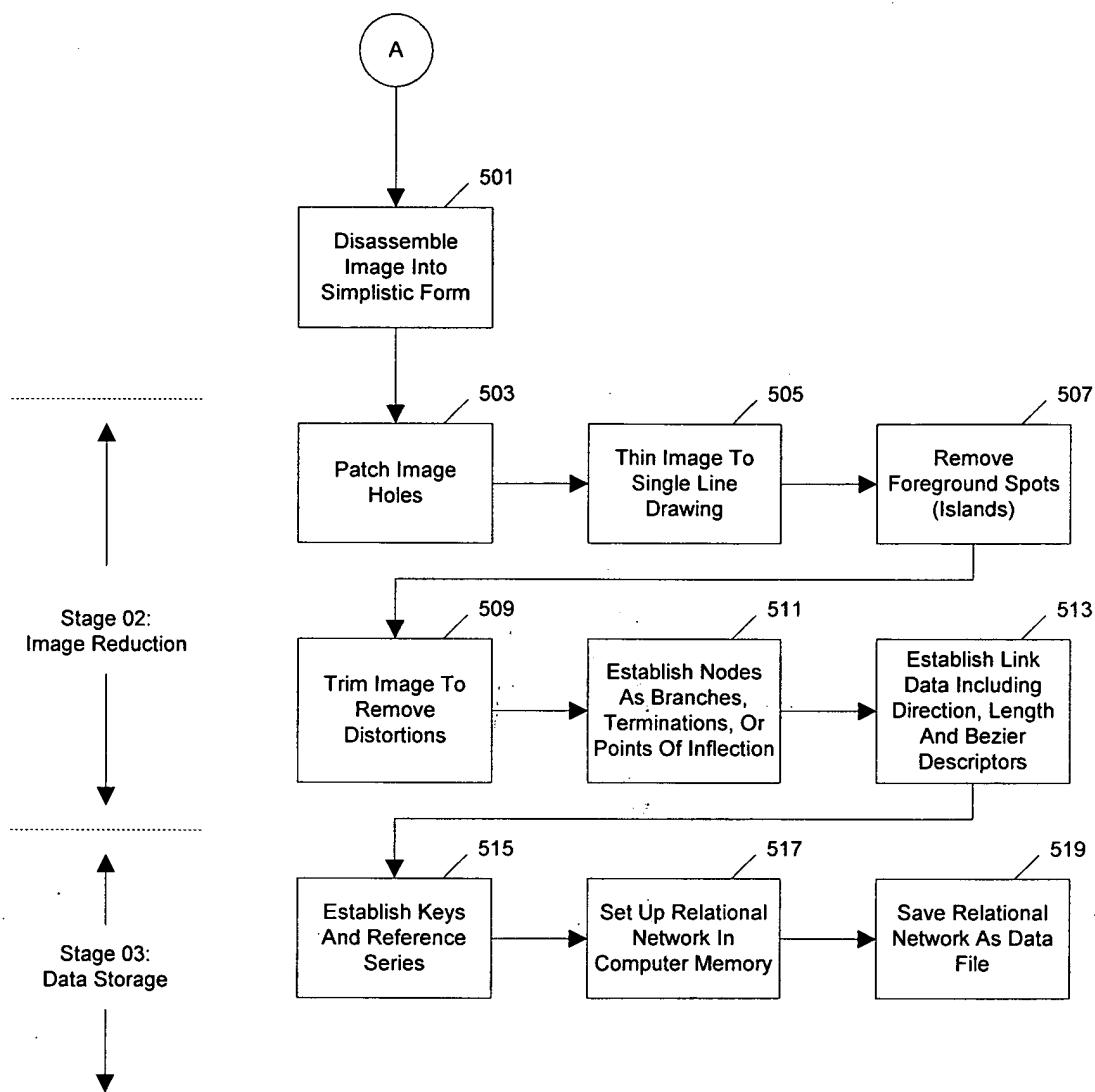
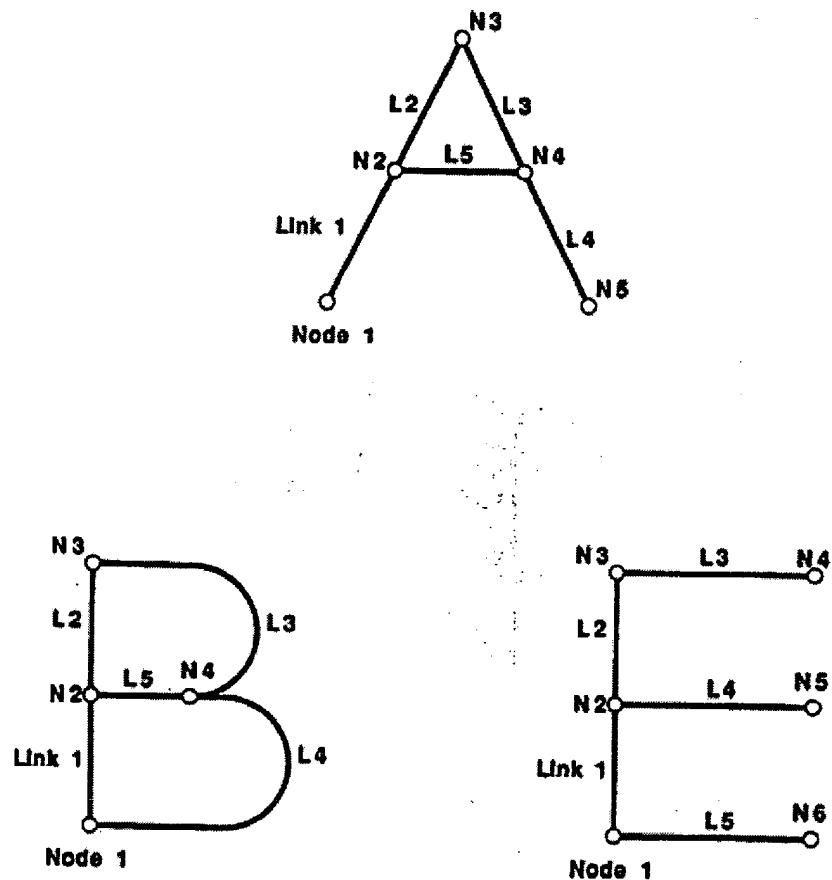


Figure 4



CREATION OF IMAGE LIBRARY

Figure 5



Link/node structure for characters "A", "B" and "E"

Figure 6

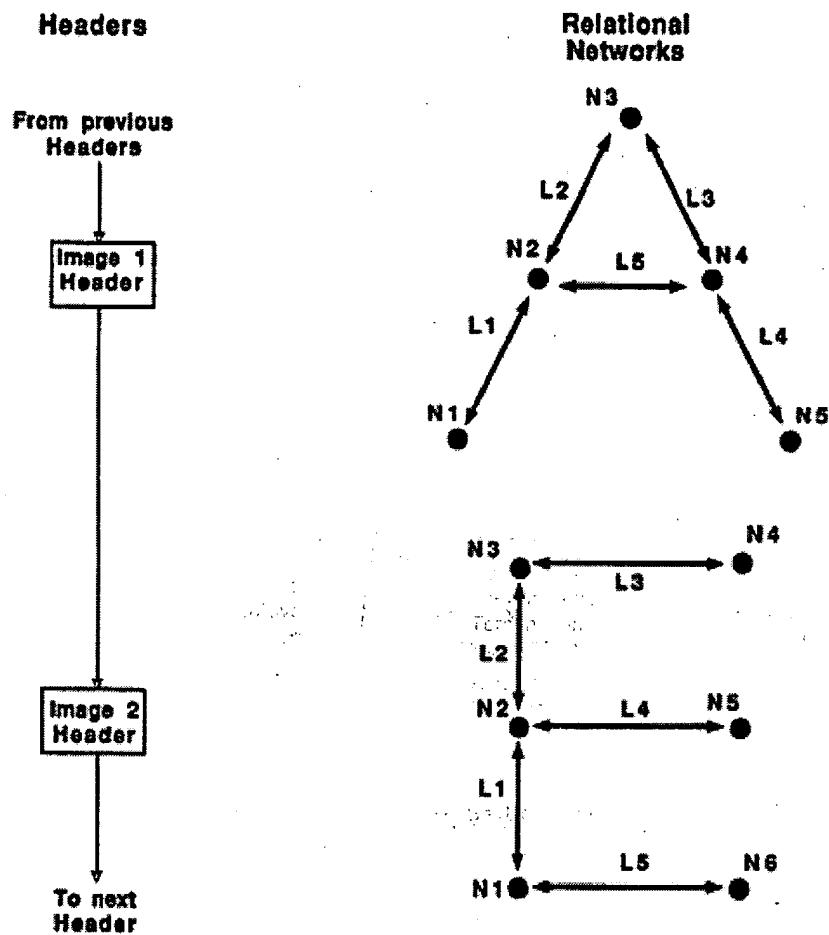


Illustration of data structure

Patent provided by Sughrue Mion, PLLC - <http://www.sughrue.com>

Figure 7

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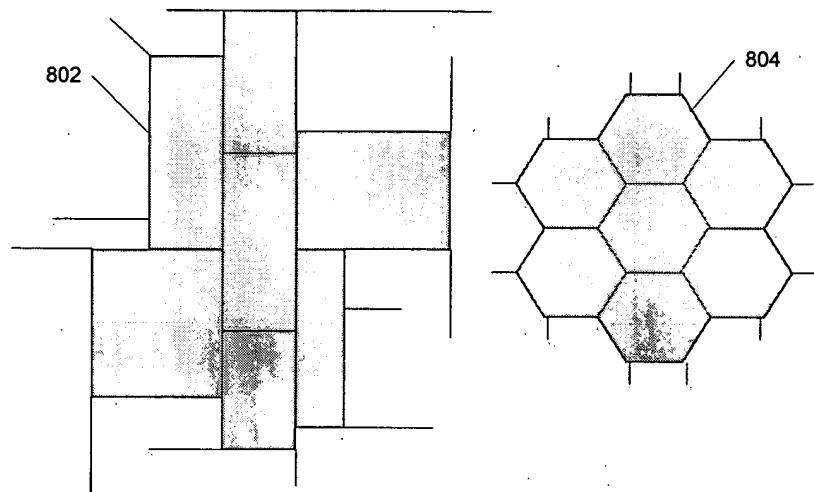
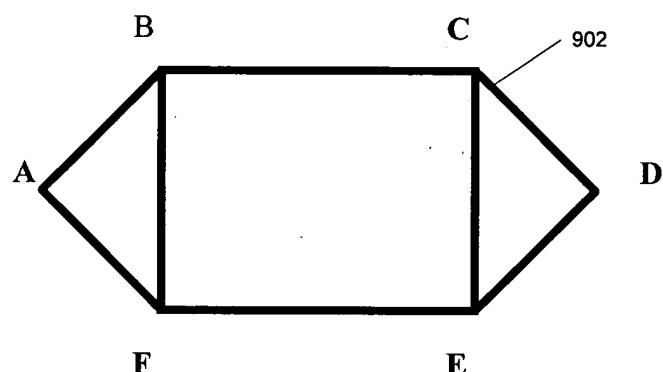


FIG. 8

Sample Graph:



Connectivity Indices

Vertex	Connectivity Array		
A	3	2	1
B	0	1	0
C	3	1	0
D	0	1	0
E	3	1	0
F	3	1	0

FIG. 9

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Before							After						
A	0	1	0	0	0	1	C	E	B	F	D	A	
B	0	0	1	0	0	1	E	0	0	0	1	1	0
C	0	0	0	1	1	0	B	0	0	0	1	0	0
D	0	0	0	0	1	0	F	0	0	0	0	0	1
E	0	0	0	0	0	1	D	0	0	0	0	0	0
F	0	0	0	0	0	0	A	0	0	0	0	0	0

FIG. 10

Examples of Graphs Embedded
in Cursive Word

Houston Hor

Houston bus

Houston stor

FIG. 11

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Examples of Known Characters
Embedded in Unknown Graphs

Ho Ho Ho

bus bus ous

sto sto sto

FIG. 12

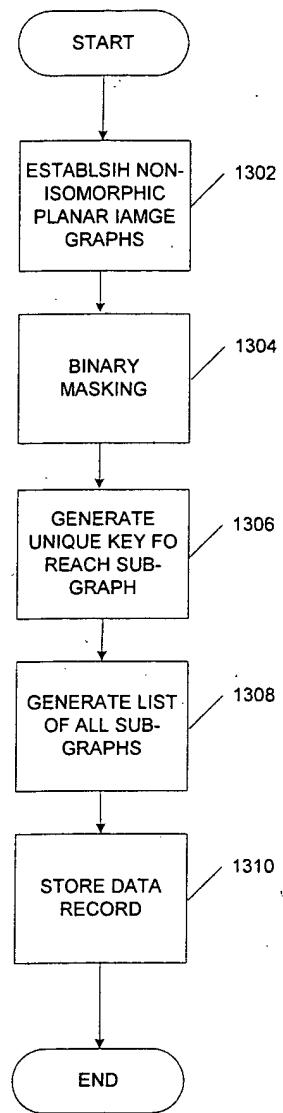


FIG. 13

15 Non-Isomo. IIC forms
of Maximal Simple Connected Planar

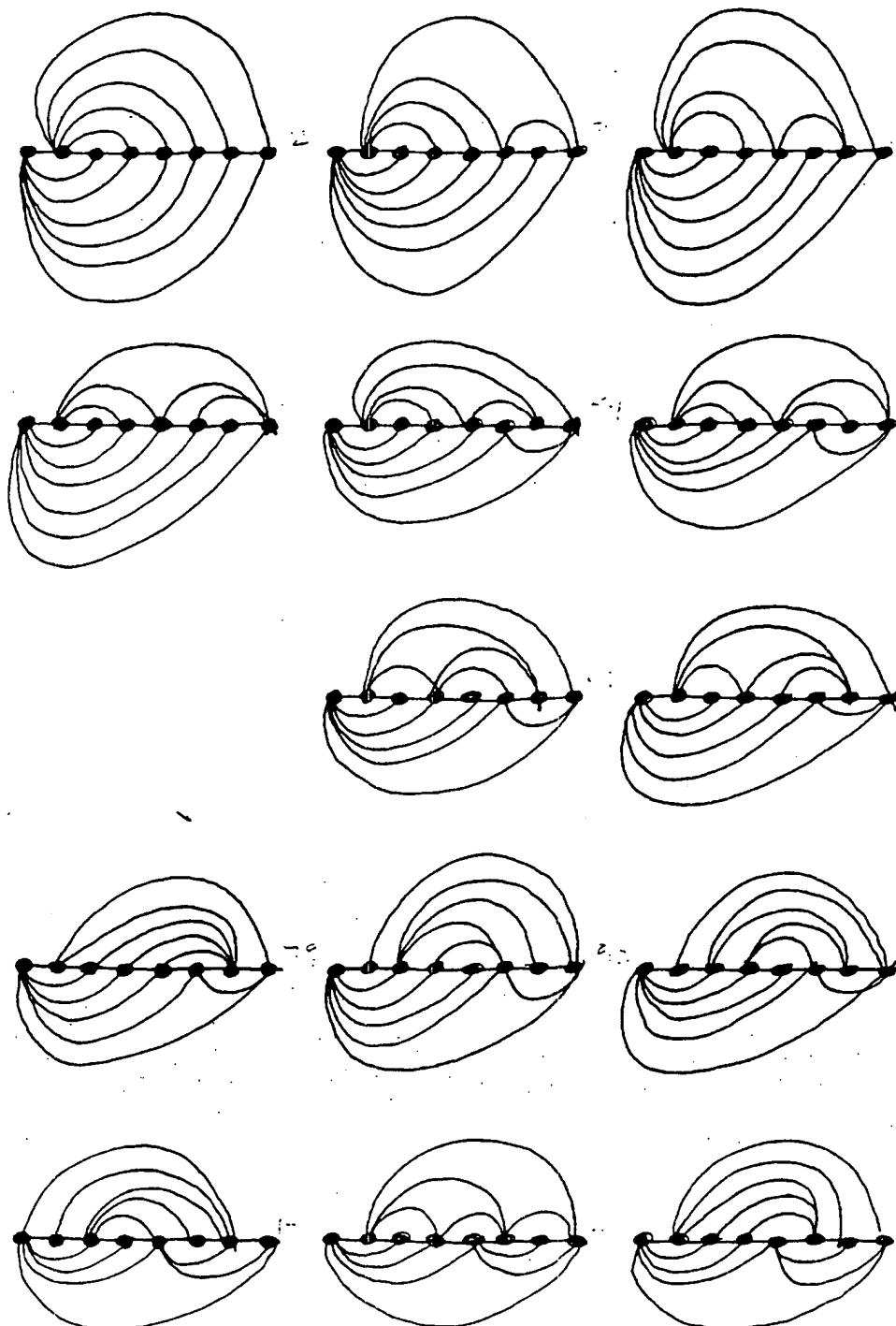
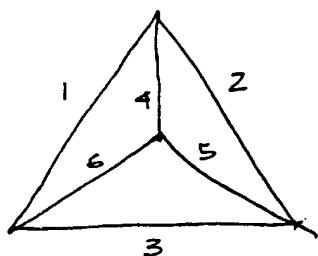


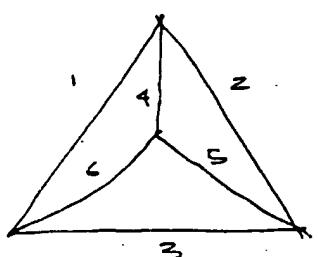
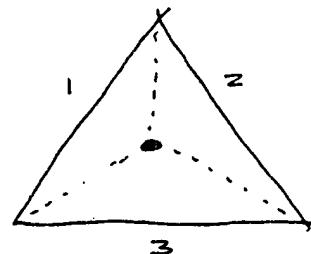
FIG. 14

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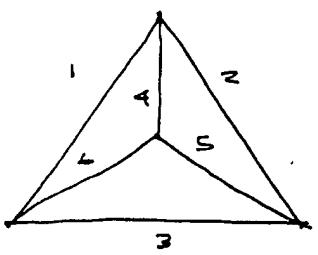
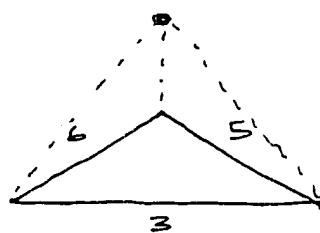
Examples of Edge Masking to Isolate Embedded graphs



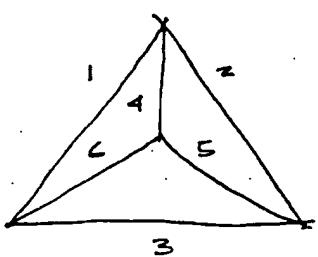
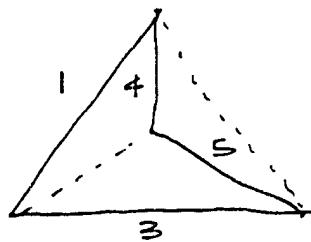
Edge 1 2 3 4 5 6
 Mask 1 1 1 0 0 0



Edge 1 2 3 4 5 6
 Mask 0 0 1 0 1 1



Edge 1 2 3 4 5 6
 Mask 1 0 1 1 1 0



Edge 1 2 3 4 5 6
 Mask 1 0 1 0 0 1

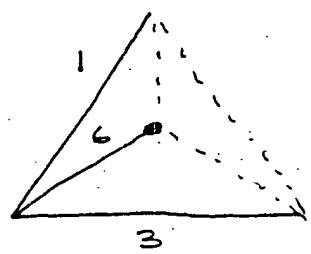
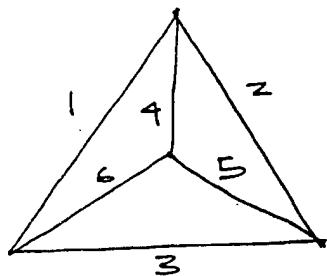
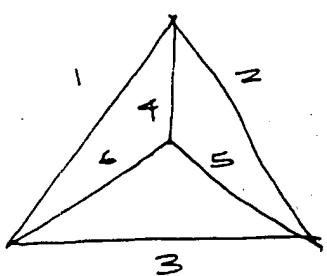
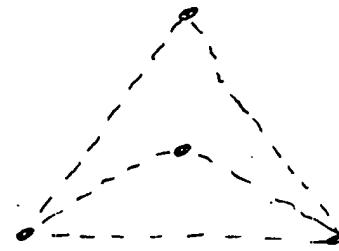


FIG. 15

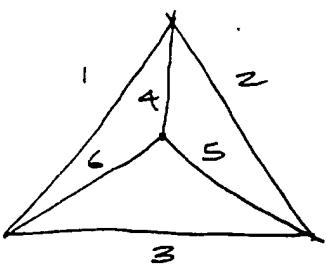
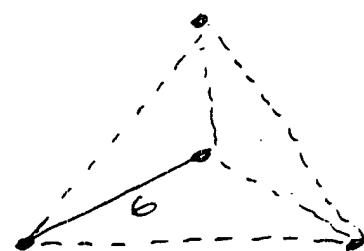
Example of Mask Using Bits in
 Binary Encoding of Counter



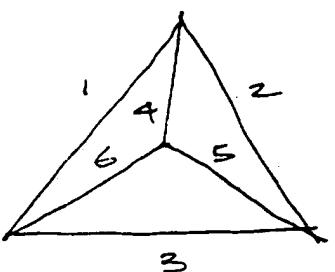
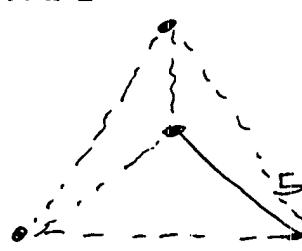
Counter 0
 Edge 1 2 3 4 5 6
 Mask 0 0 0 0 0 0



Counter 1
 Edge 1 2 3 4 5 6
 Mask 0 0 0 0 0 1



Counter 2
 Edge 1 2 3 4 5 6
 Mask 0 0 0 0 1 0



Counter 3
 Edge 1 2 3 4 5 6
 Mask 0 0 0 1 1 1

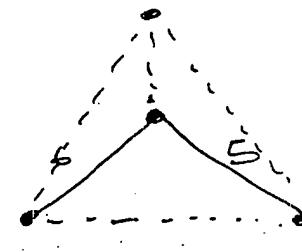
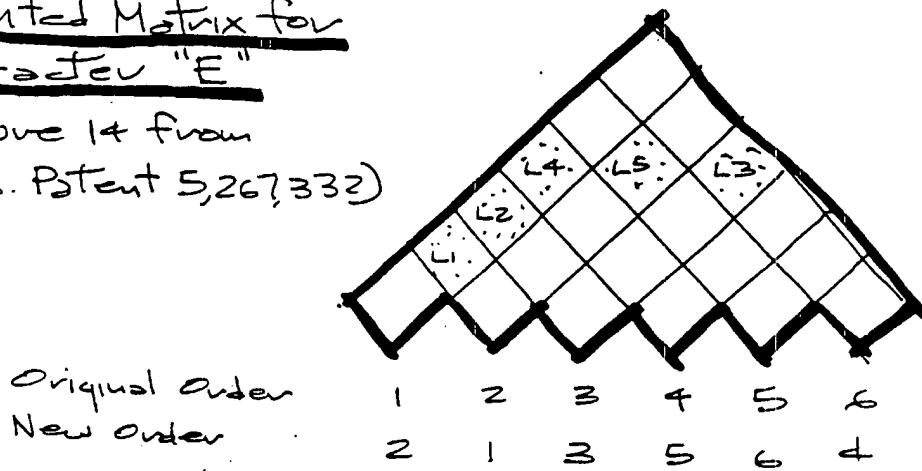


FIG. 16

Relationship of Translation
 Sequence to Weighted Key
 Matrix

Weighted Matrix for
 Character "E"

(Figure 14 from
 U.S. Patent 5,267,332)



Adjacency Table
 Node sequence

Translation
 Table

Original sequence	New sequence
2	1
1	2
3	3
5	4
6	5
4	6

FIG. 17

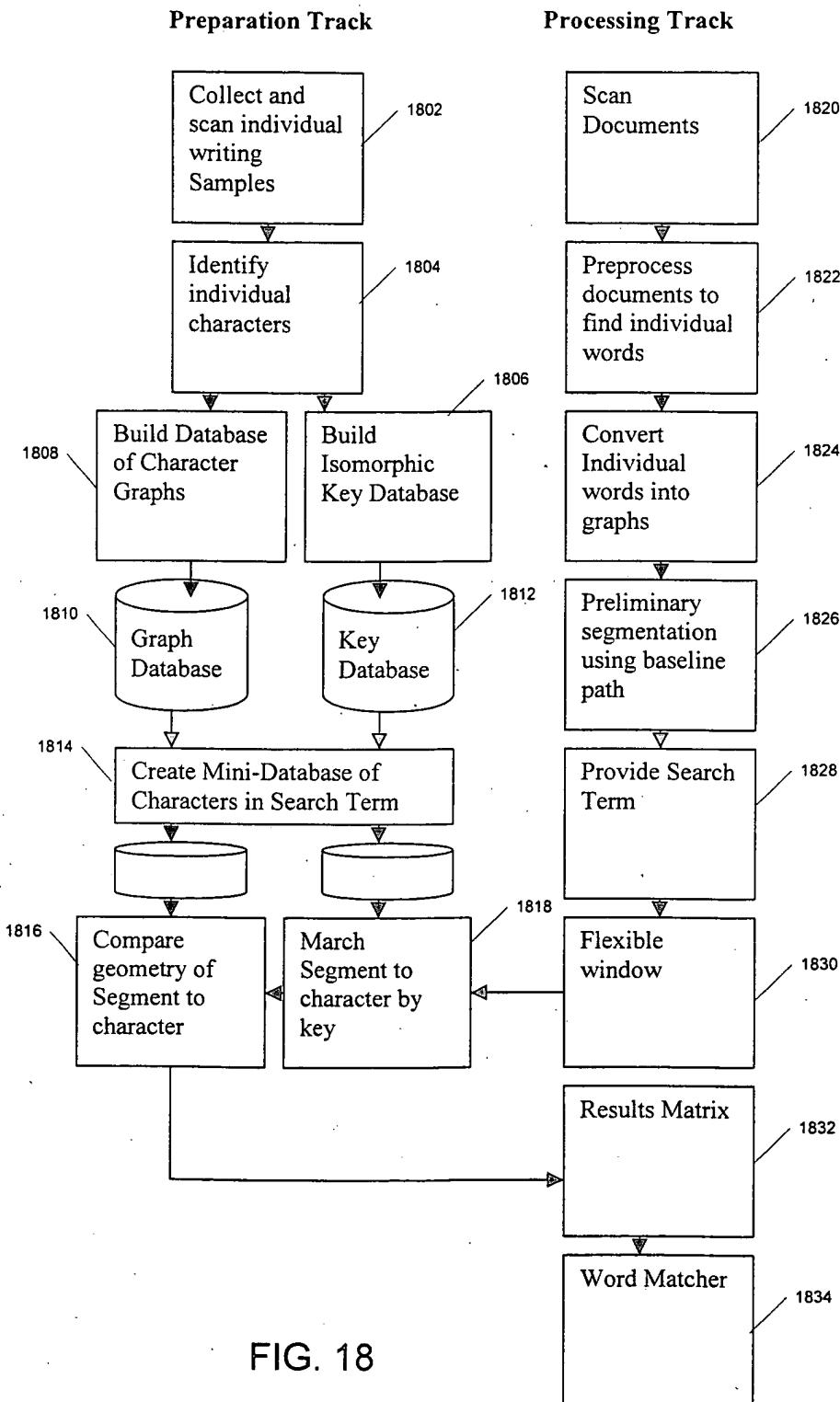


FIG. 18

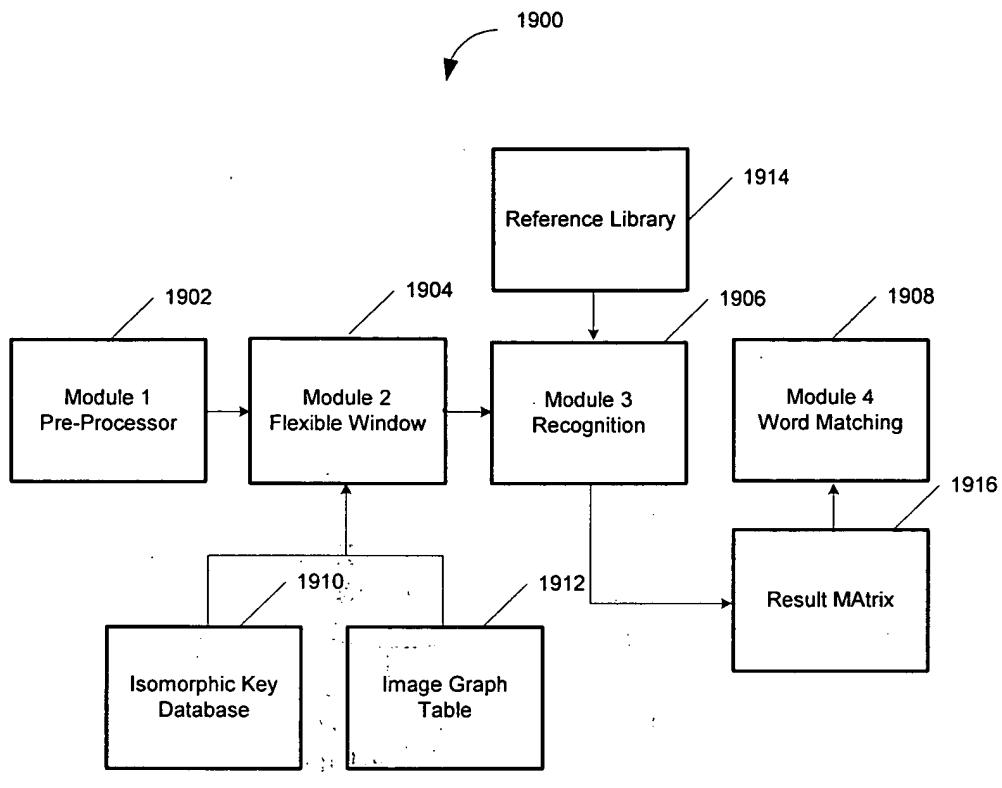
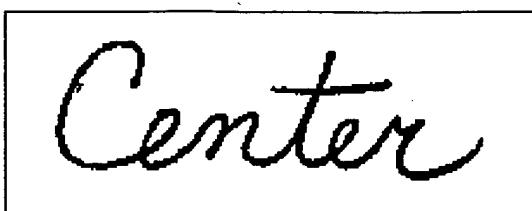
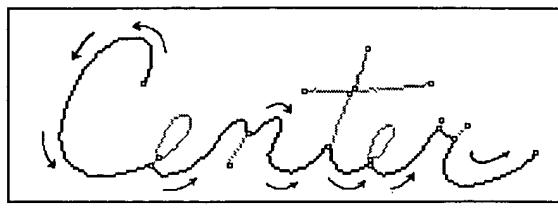


FIG. 19

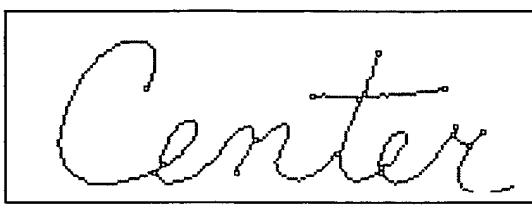
: Creation of the Baseline Path



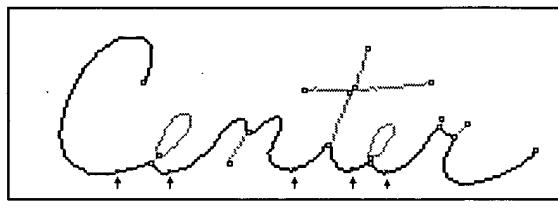
Item a.



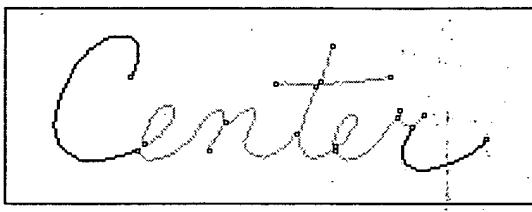
Item e.



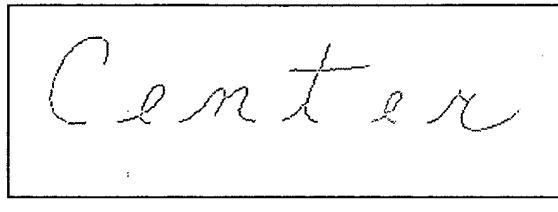
Item 1b.



Item f.



Item c.



Item g.

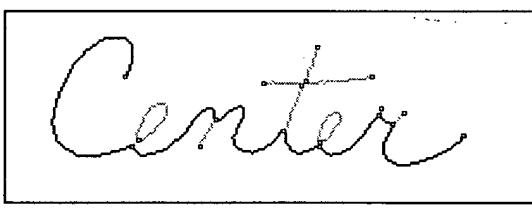


FIG. 20

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Charles

Item a.

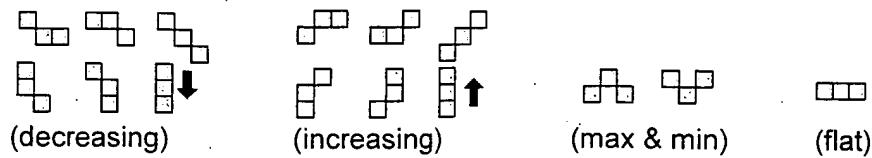
Charles

Item b.

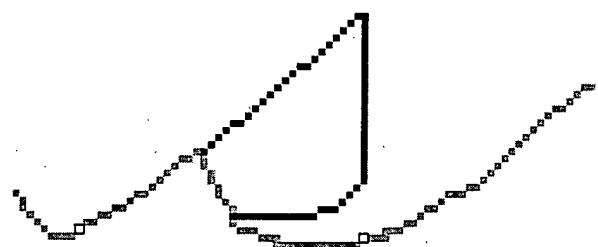
FIG. 21

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Pixel Patterns for Segmenting Zones



Item a.



Item b.

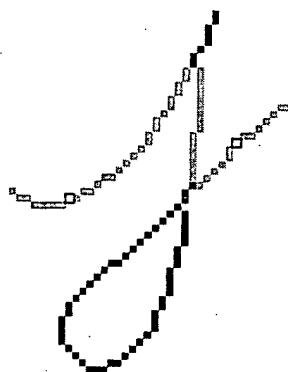


FIG. 22

Item c.

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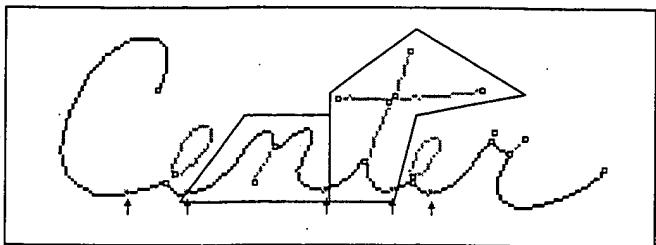
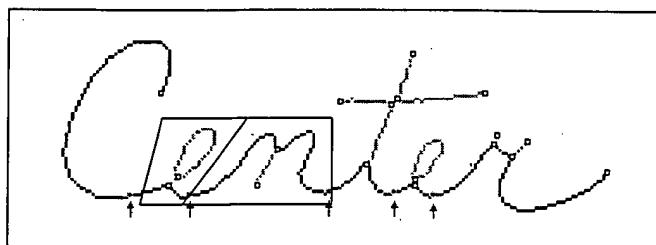
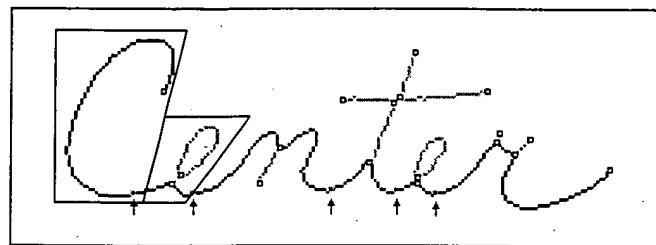
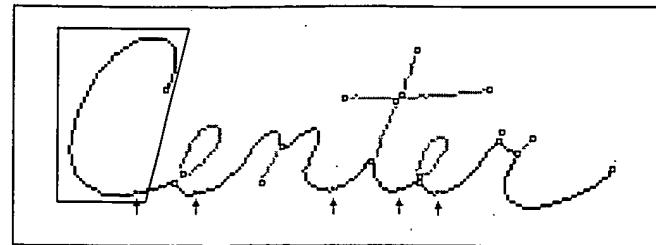


FIG. 23